STATEMENT OF LEGAL AND FACTUAL BASIS

Old Virginia Brick Co. - Salem Plant
Salem, Virginia
Permit No. VA-20302

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, Old Virginia Brick Co. has applied for a Title V Operating Permit for its Salem facility. The Department has reviewed the application and has prepared a Title V Operating Permit.

FACILITY INFORMATION

Permittee
Old Virginia Brick Co. - Salem Plant
P. O. Box 508
Salem, VA 24153

Facility
Old Virginia Brick Co. - Salem Plant
2500 West Main Street
Salem, VA

AIRS ID No. 51-161-0001

SOURCE DESCRIPTION

SIC Code: 3251 - This plant primarily manufactures common face bricks, as well as small amounts of glazed brick and special shapes. DEQ's files indicate that the plant, which has been a registered source since 1972, has been in existence since 1924.

The facility is a Title V major source of hydrogen fluoride (HF). This source is located in an attainment area for all pollutants, and is not subject to PSD. The facility was previously permitted under a Minor NSR Permit issued on October 5, 1977, to switch its two brick tunnel kilns from a mixture of gas and oil to primarily coal. However, since the installation of high velocity gas burners in 1985 oil can no longer be burned, and the 1977 permit allowing coal to be burned has recently been rescinded at the company's request. In 1995 the facility added the capability to burn propane in addition to natural gas. The facility also received an October 2, 1987 NSR permit to construct and operate a replacement sand dryer and related equipment.

COMPLIANCE STATUS

The facility is inspected once a year. The Department issued a Request for Corrective Action regarding borderline opacity from the #3 kiln stack in December 1997. Later that month the facility submitted a control program to address operational procedures to reduce opacity. The facility was found to be in compliance following an inspection conducted by the Department on July 16, 1999, and it currently is considered in compliance.

EMISSION UNIT AND CONTROL DEVICE IDENTIFICATION

The emissions units at this facility consist of the following :

Emissions Unit No.	Stack No.	Emissions Unit Description	Manufacturer and Date of Construction (if known)	Size/Rated Capacity
CRSC		Clay crushing, screening, storage	McLanahan 30 x 42 jaw crusher, belt conveyors, screens and covered storage tank; pre-1972	32 tons/hr and 100,000 tons/yr raw material output
SD	01	Gas-fired sand dryer (rotary dryer)	Maxon; 1987	0.875 mmBTU input; 2 tons/hr sand output
DG	01 (ball mill and fluidizer only)	Drying and grinding equipment (sand plant): Elevator, scalping screen, ball mill, fluidizer	Unknown mfg. and date	2 tons/hr sand output
BM	01 (weigh batcher, blender & fluidizer only); 1BV - 4BV (4 silos only)	Blending and mixing equipment (sand plant): Weigh batcher, blender, fluidizer, 4 silos, 2 receivers	Unknown mfg. and date	2 tons/hr sand output
DRY3	02 - 04 (drying oven only); 15 (brick molding machine only)	Plant 3 brick molding machine and gas-fired batch drying oven	1960	4 mmBTU/hr input to DRY3; 17.5 tons/hr wet brick input to DRY3 & 120,000 tons/yr input to BOTH dryers (DRY3 and DRY4)
DRY4	05 - 08 (drying oven only)	Plant 4 brick molding machine and gas-fired batch drying oven	1965	4 mmBTU input to DRY4; 19 tons/hr wet brick input to DRY4 & 120,000 tons/yr input to BOTH dryers (DRY3 and DRY4)

Emissions Unit No.	Stack No.	Emissions Unit Description	Manufacturer and Date of Construction (if known)	Size/Rated Capacity
KIL3	09 - 10	Plant 3 gas-fired kiln dryer and tunnel kiln	1960	26 mmBTU input to KIL3; 10.4 tons/hr dry brick output from KIL3 & 100,000 tons/yr output from BOTH kilns (KIL3 and KIL4)
KIL4	11 - 12	Plant 4 gas-fired kiln dryer and tunnel kiln	1965	26 mmBTU input to KIL4; 5.4 tons/hr dry brick output from KIL4 & 100,000 tons/yr output from BOTH kilns (KIL3 and KIL4)

The pollution control equipment at this facility consists of the following :

Stack No./ Emissions Unit No.	Control Equipment Description	Manufacturer and Date of Construction (if known)	Size/Rated Capacity	Pollutant
01/SD,DG,BM (Sand dryer, ball mill, 2 fluidizers, weigh batcher and blender)	Baghouse	Torit Model TT-770 (serial BB-1919); 1987	99% design control efficiency	Particulate
1BV - 4BV/BM (Pneumatic conveying to silos 1-4)	4 baghouses (one for each silo)	Griffin 36IS; 1987	99% design control efficiency	Particulate
15/DRY3 (Brick molding machine)	Baghouse	Unknown mfg. and date	99% design control efficiency	Particulate

EMISSIONS INVENTORY

A copy of the 1997 permit application emission inventory is attached as Attachment A. Emissions are summarized in the following tables.

1997 Actual Criteria Pollutant Emissions in Tons/Year

Emission Unit	VOC	CO	SO_2	PM-10	NO_x
CRSC				7.41	
SD				0.013	0.047
DRY3 & DRY4	0.86	34.21	ND	ND	2.79
KIL3 & KIL4	0.68	34.21	19.10	24.23	9.98
Total	1.54	68.42	19.10	31.65	12.82

1997 Actual Hazardous Pollutant Emissions in Tons/Year

Emission Unit	HF	HCl
KIL3 & KIL4	10.55	4.85

EMISSION UNIT APPLICABLE REQUIREMENTS

Limitations

The following applicable limitations are State BACT requirements from the Minor NSR Permit issued on October 2, 1987. A copy of the permit is attached as Attachment B:

> Condition 4, limiting the annual throughput of sand to the sand dryer to 4160 tons, calculated monthly as the sum of each consecutive 12 month period.
>
> Condition 5, limiting particulate emissions from the sand dryer to 1.7 pounds per hour and 1.8 tons per year.
>
> Conditions 5 and 6, limiting visible emissions from the sand dryer and related equipment to five percent (5%) opacity except during one six-minute period in any one hour in which visible emissions shall not exceed thirty percent (30%) opacity.

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

> 9 VAC 5-40-260, Existing Source Standard for Particulate Matter, limiting hourly emissions from Plant 3 and 4 batch dryers and tunnel kilns.
>
> 9 VAC 5-40-280, Existing Source Standard for Sulfur Dioxide, limiting hourly fuel burning emissions from Plant 3 and 4 tunnel kilns.
>
> 9 VAC 5-40-80 and 9 VAC 5-40-320, Existing Source Standard for Visible Emissions, limiting visible emissions from all emission units except the sand dryer and related equipment to twenty percent (20%) opacity except during one six-minute period in any one hour in which visible emissions shall not exceed sixty percent (60%) opacity.

Monitoring

The monitoring and recordkeeping requirements in the NSR permit have been modified to meet Part 70 requirements. The permittee shall monitor and record on a monthly and annual basis the throughput of sand to the sand dryer and shall maintain records of the pollutant-specific emission factors relied upon for the purpose of calculating actual emission rates, and associated equations. In addition to the annual sand throughput limit from the 1987 permit, a monthly sand throughput limit has been added to provide compliance with the short term particulate emission limit from the sand dryer. Monthly averages can be considered representative of short term emissions from this source at this attainment location. Actual particulate emissions from the sand dryer assume an emission factor of 70 lbs/ton of sand and the use of a baghouse with 99% control efficiency. Actual emissions will be calculated using the following formula: Tons sand used/time period x 70 lbs PM/ton sand x 0.01 (proportion emitted) = lb PM emitted/time period.
The permittee shall monitor and record on a per-batch basis the throughput of bricks to the dryers and shall maintain records of the pollutant-specific emission factors relied upon for the purpose of calculating actual

emission rates, and associated equations. Calculation of actual particulate emissions from the batch drying ovens assumes the following: (a) 16 hour dry cycle; (b) Dryer 3 contains 3 chambers, each holding 36 cars, each of which in turn holds 864 bricks; therefore, total dryer capacity = 108 cars or 93,312 bricks; (c) Dryer 4 contains 2 chambers, each holding 64 cars, each of which in turn holds 792 bricks; therefore, total dryer capacity = 128 cars or 101,376 bricks; (d) 1 brick = 6 lbs ("wet" weight); (e) emission factor $E = 4.10\ p^{0.67}$ where p = process weight rate in tons/hr. Actual emissions will be calculated using the following formula: No. of bricks/batch duration (hrs) x 6 lbs/brick x ton/2000 lbs x E (see above) = 1b PM emitted/hr.

The permittee shall also monitor and record on a per-batch basis the throughput of bricks to the kilns and shall maintain records of the pollutant-specific emission factors relied upon for the purpose of calculating actual emission rates, and associated equations. Calculation of actual particulate emissions from the tunnel kilns assumes the following: (a) 24 hour dry cycle; (b) Kiln 3 accepts 26 cars, each of which holds 3840 bricks; therefore, total kiln capacity = 99,840 bricks; (c) Kiln 4 accepts 18 cars, each of which holds 2880 bricks; therefore, total kiln capacity = 51,840 bricks; (d) 1 brick = 5 lbs ("dry" weight); (e) emission factor $E = 4.10\ p^{0.67}$ where p = process weight rate in tons/hr. Actual emissions will be calculated using the following formula: No. of bricks/batch duration (hrs) x 5 lbs/brick x ton/2000 lbs x E (see above) = 1b PM emitted/hr.

Fuel use is limited to natural gas and propane, but throughput is not limited in the permit because of the minimal sulfur content of these fuels. However, the permittee shall monitor and record on an annual basis the amount of natural gas or propane burned in the kilns, as each of these has a rated capacity above 10 mmBTU/hr and is thus subject to 9 VAC 5-40-280. The emission limit is in terms of lbs/mmBTU (on an hourly basis) and assumes S = 2.64 K where S = the allowable emissions of SO_2 in lbs/hr and K = actual heat input at capacity in mmBTU/hr (from 9 VAC 5-40-280). Actual fuel burning emissions are expected to be well below these emission limits; if both kilns are fired at capacity 8760 hours per year, actual emissions using the AP-42 emission factor of 0.6 lb/million cubic feet of natural gas are expected to be 273 lb/year.

The permittee shall also visually observe each emissions unit with a visible emissions requirement in this permit at least once each calendar week for at least a brief time period to determine which operating emissions units have normal visible emissions.

Recordkeeping

The permit includes requirements for maintaining records of all monitoring and testing required by the permit. These include records of sand throughput to the sand dryer, brick throughput to the batch dryers and tunnel kilns, natural gas or propane use in the tunnel kilns, and actual emission calculations.

Testing

The permit does not require source tests. The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

Reporting

NA

Streamlined Requirements

NA

GENERAL CONDITIONS

The permit contains general conditions required by 40 CFR Part 70 and 9 VAC 5-80-110 that apply to all Federal operating permit sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also requires notification of deviations from permit requirements or any excess emissions, including those caused by upsets, within one business day.

STATE ONLY APPLICABLE REQUIREMENTS

NA

FUTURE APPLICABLE REQUIREMENTS

The facility is a major source of hazardous air pollutants (hydrogen fluoride). Maximum achievable control technology standards (MACT) for clay products manufacturing, under 40 CFR Part 63 and 9 VAC 5 Chapter 60, are scheduled for promulgation on November 15, 2000. The facility may be subject to those requirements when promulgated.

INAPPLICABLE REQUIREMENTS

New Source Performance Standard (NSPS) Requirements for Nonmetallic Mineral Processing Plants in 40 CFR Part 60, Subpart OOO, and New Source Performance Standard (NSPS) Requirements for Calciners and Dryers in Mineral Industries in 40 CFR Part 60, Subpart UUU are not currently applicable.

COMPLIANCE PLAN

NA

INSIGNIFICANT EMISSION UNITS

No insignificant emission units were noted by the applicant. It should be noted that the sand dryer and batch drying ovens, while not insignificant with respect to process emissions, are rated at less than 10 mmBTU input and therefore are insignificant with respect to fuel burning emissions.

CONFIDENTIAL INFORMATION

The permittee did not submit a request for confidentiality. All portions of the Title V application are suitable for public review.

PUBLIC PARTICIPATION

A public notice regarding the draft permit was in the August 29, 1999 edition of the Roanoke Times and World-News. Public comments were accepted from August 29 through September 29, 1999. No comments were received in this office, except for EPA's comments dated September 14, 1999, which have now been addressed in the permit.